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October 25, 2011

Also Sent Via E-mail

Mr. Robert J. Wyatt
NW Natural
220 N.W. Second Avenue
Portland, OR 97209

Re: TPH Fraction Data Gap Field Sampling Plan
NW Natural – "Gasco Site"
Portland, Oregon
ECSI No. 84

Dear Mr. Wyatt:

The Oregon Department of Environmental Quality (DEQ) reviewed the "TPH Fraction Data Gaps Field Sampling Plan for NW Natural Gasco Site," dated August 12, 2011 (Data Gaps FSP). The Data Gaps FSP provides NW Natural's approach for collecting manufactured gas plant (MGP) total petroleum hydrocarbons (TPH) data on property owned by NW Natural (i.e., the NW Natural Property or "Gasco Site.") The Data Gaps FSP is attached to a cover letter which further discusses collection of TPH fraction data, observations of MGP waste, and addressing chemicals of interest (COI) in the Risk Assessment (i.e., the human health [HHRA] and ecological [ERA] risk assessments combined). Anchor QEA, LLC prepared the cover letter and Data Gaps FSP for NW Natural.

DEQ identified lack of MGP TPH fractions data as a data gap for the Gasco Site remedial investigation (RI) and Risk Assessment in our comments letter dated March 10, 2010. The March 10th letter also informed NW Natural the list and screening of COI identified in the Risk Assessment needed to be updated consistent with the RI Report[1] as they did not reflect the current status of sampling and analytical data for the Gasco Site. DEQ's basis and purpose for conducting data gaps sampling at the Gasco Site, including the sampling and analytical program, were further discussed during meetings on January 25th and March 17, 2011 and in related correspondence. Meeting summaries prepared by NW Natural and revised by DEQ dated February 24th and May 12, 2011 should be referred to for additional information and details.

The primary purpose of this letter is to inform NW Natural that DEQ does not approve the Data Gaps FSP, and requests the document be revised to incorporate the following changes:

- All samples will be analyzed for the components needed to develop site-specific risk-based concentrations (RBCs) for MGP TPH, including volatile petroleum hydrocarbons (VPH), extractible petroleum hydrocarbons (EPH); benzene, toluene, ethylbenzene, total xylenes (BTEX compounds); naphthalene, 1,2,4-trimethylbenzene (1,2,4-TMB), and 1,3,5-trimethylbenzene (1,3,5-TMB);
- Site-specific MGP TPH RBCs will be calculated consistent with RBDM Guidance[2] (see "Method 2," page 30);
- Samples will be analyzed for TPH using NWTPH-Gx and NWTPH-Dx methods for comparison with TPH data collected previously at the site;

[1] Hahn and Associates, Inc., 2007, "Remedial Investigation Report, NW Natural-Gasco Facility, 7900 NW St. Helens road, Portland, Oregon," April 30, a report prepared for NW Natural.
[2] http://www.deq.state.or.us/lq/rbdm.htm

- Samples will be analyzed for Gasco Site COI for which data is limited or unavailable, including 1-methylnaphthalene, 2-methylnaphthalene, dibenzofuran, thiocyanate, and carbazole for completeness (collectively referred to as "data-limited COI" in this letter); and
- Detailed descriptions of field sampling procedures will be added to the document, including but not limited to, the protocols for collecting and compositing samples for analysis.

In addition, field sampling and compositing should be performed consistent with DEQ's comments to sections 2.1.1 and 2.1.2 of the Data Gaps FSP.

DEQ's comments on the cover letter and Data Gaps FSP are provided below. Where DEQ's comments apply to the cover letter and the Data Gaps FSP, the comments are applied to the FSP. NW Natural and DEQ are currently using the six-step process NW Natural proposed in April 2011, and modified in August 2011 as a framework for completing the Risk Assessment. In the context of the six-step process, DEQ's comments are intended to advance Step #4 (TPH Fractions Sampling and Analysis).

DEQ continues to work towards resolving disagreements by recommending technically-sound approaches that rely on focused sampling and analysis, and previously collected data and site information to complete the risk assessment and support the feasibility study (FS). Since we submitted our March 10, 2010 comments letter on the RI and Risk Assessment reports, DEQ has worked to provide NW Natural with our expectations on what is needed to complete the risk assessment. Our comments regarding the Data Gaps FSP continues these efforts by clearly communicating DEQ's expectations for field sampling work, sample analysis, and data use to support the needs of the risk assessment and its completion. In other words, if NW Natural conducts the sampling detailed in this letter and uses the data as indicated, DEQ believes the needs of the risk assessment are likely to be met.

NW Natural should not interpret this to mean additional sampling is not warranted after the risk assessment is complete. For clarification and consistent with agreements made between NW Natural and DEQ in January 2011, the hot spot determination for the Gasco Site will be done separately and subsequent to completion of the risk assessment. Furthermore, as acknowledged by NW Natural, additional sampling may be needed to support the uplands FS. Based on this information, DEQ anticipates additional sampling may be warranted to address the needs of both the hot spot determination and the FS.

DATA GAPS FSP COVER LETTER

1st paragraph. NW Natural indicates the sampling and analytical work will be implemented, "...when it receives written assurance from DEQ that this will be the last data collection effort required to complete the risk assessment at the Gasco site." Given the nature of site investigations and site data gaps issues, DEQ cannot guarantee that additional sampling will not be necessary. That said, with NW Natural's commitment to conduct sampling to fully support the hot spot determination and uplands FS and to revise the Data Gaps FSP consistent with our comments, DEQ considers it likely the sampling and analytical work described in the Data Gaps FSP will be sufficient to complete the risk assessment.

Observations of MGP Residuals

1st paragraph. There appears to have been a misunderstanding between NW Natural and DEQ during the June 20, 2011 meeting. DEQ does not recall requesting, and did not intend to indicate that NW Natural should: 1) collect a separate set of discrete samples from the MGP waste source area(s) for

analysis of total concentrations of gasoline-range (TPH-Gx) and diesel-range petroleum hydrocarbons (TPH-Dx); and 2) use the data as surrogate values for soils of "similar description" at the Gasco Site. For clarification, DEQ's expectation is that NW Natural will collect and analyze samples for use consistent with our March 10, 2010 letter regarding the RI and Risk Assessment and the May 12, 2011 revisions to NW Natural's summary of the March 17th meeting. In other words, DEQ expects that, "For comparison with available site data [MGP waste source area] samples should also be analyzed for total petroleum hydrocarbons using NWTPH-Gx, and NWTPH-Dx methods." As such, analyzing MGP waste source area samples for TPH-Gx, and TPH-Dx does not represent an additional request by DEQ.

NW Natural further indicates that DEQ's March 10, 2010 comments letter regarding the RI and Risk Assessment reports did not indicate observations of MGP wastes were of concern from a human health perspective. This assertion is incorrect and should be removed from the revised version of the Data Gaps FSP. DEQ identifies the lack of MGP waste TPH data as a data gap for the RI and for both the HHRA and ERA, and discusses the data gap in terms of RBCs for human health exposure (see the top of page 8). In addition, our general comments on the HHRA regarding "Risk of Exposure to MGP Waste" (see page 25) state, "As indicated in DEQ's comments to the RI Report and ERA, the absence of TPH fraction data characterizing the various releases of MGP wastes at the site prevents a complete assessment of human health and ecological risks." Furthermore, Step #1 of DEQ's approach for addressing lack of MGP waste TPH data in the HHRA recommends that, "NW Natural presumes the MGP waste management areas represent unacceptable risk to human health."

The agenda DEQ prepared for the January 25, 2011 meeting provides information to support DEQ's March 10th approach. The agenda includes a topic ("Presence of 'Tar and Oil") that summarizes the information DEQ compiled to identify analytical data for MGP waste (i.e., lampblack, carbon pitch, oil, and/or tar) and discusses the results in terms of human health exposure. One of DEQ's conclusions was that, "Soil samples collected from between ground surface and 12 feet bgs with visual evidence of MGP waste had detected concentrations of one or more PAHs exceeding industrial soil PRGs (i.e., the criteria used to evaluate the data in the RI Report) in thirty-two (32) out of thirty-two (32) samples." As indicated in the January 25th agenda, based on compiling the information DEQ concluded the presence of MGP waste can be used as a surrogate for laboratory analyses. DEQ also identified the path forward for incorporating observations of MGP waste into the Risk Assessment which indicated that, "Except for the former Tar Ponds Area, NW Natural should use the information compiled by DEQ in conjunction with soil analytical data and the screening criteria to be used in the HHRA and ERA, to develop conclusions regarding the horizontal and vertical extent of contamination exceeding state criteria."

2nd paragraph. In the first sentence of the paragraph NW Natural indicates that a, "...sufficient soil sample density already exists to characterize potential soil exposure risks at the Gasco site...." NW Natural further indicates in the last sentence that because observations of MGP waste occur in areas of the site where unacceptable risk is acknowledged there is, "...no benefit to the risk assessment to performing further evaluation of these and other observations of MGP residuals."

DEQ disagrees with NW Natural's statements. Lack of a consistent soil dataset over the depth intervals of interest (i.e., 0-3.5 feet, 3-12 feet) is discussed in our March 10, 2010 letter, and in part prompted DEQ to compile available information regarding drilling and sampling methods; and material sampling intervals, descriptions, and analyses. The compilation was provided to NW Natural by e-mail on February 23, 2010. DEQ notes, the information was compiled and provided to NW Natural with the objective of reducing the scope of additional sampling work at the site, and to assist in preparing materials for the March 17th meeting. Furthermore, as indicated previously in DEQ's May 12, 2010 revisions to

NW Natural's March 17th meeting summary, NW Natural's acknowledgment of unacceptable risk is not sufficient in and of itself to characterize risk for the site and/or provide the information necessary to inform the uplands FS. Although NW Natural indicates observations of MGP waste will be considered during development of the FS and in remedial design, risks associated with MGP contamination must be adequately quantified so that regulatory requirements, such as identifying and addressing hot spots, can be appropriately considered in scoping and planning the uplands FS. Furthermore, DEQ notes that to date NW Natural has provided no information regarding the data needs of the FS and/or how those needs will be identified and addressed.

Based on the information summarized above, DEQ's position remains the same as indicated in our March 10, 2010 letter and communicated during the January 25th and March 17th meetings; "...the presence of MGP waste can and should be used as a surrogate for laboratory analyses where analytical data is insufficient to support the risk assessment and/or any future evaluations of site data needed to inform the uplands FS."

Proposal for Addressing COIs in Risk Assessment

1st paragraph. This paragraph is incorrect and should be revised consistent with the information provided here by DEQ. Carbazole, dibenzofuran, 1-methylnaphthalene, and 2-methylnaphthalene are included in the list of COI identified by NW Natural in the RI Report (see Section 2.5 [Chemicals of Interest] for the list). In our March 10, 2010 letter, DEQ identified 1,2,4-TMB, 1,3,5-TMB, low-molecular weight polycyclic aromatic hydrocarbons (LPAHs), heavy-molecular weight PAHs (HPAHs), and MGP TPH as COI consistent with state and/or federal guidance, groundwater monitoring data, and the needs of the HHRA and/or ERA.

Thiocyanate was added to the COI list during the January 25, 2011 meeting. It was added based on groundwater sampling work conducted at the site to support evaluations of cyanide analytical methods. The detected concentrations of thiocyanate in groundwater samples collected from five monitoring wells and a pilot extraction well (PW-01-80) ranged between 300 microgram per liter (ug/L) and 600 ug/L. The current EPA tap-water regional screening level (RSL) for thiocyanate for is 7.3 ug/L. As such, the detected concentrations of thiocyanate are between 40 and 80 times greater than the current RSL. It is unclear to DEQ why thiocyanate was not evaluated previously as the chemical is identified as an MGP site COI in a reference guide for managing MGP sites prepared for the gas industry[3]. Additionally, federal soil and tap-water screening levels for thiocyanate have been available since at least 2000.

4th through 6th paragraphs, COI and Surrogates. Consistent with discussions made during the January 25th and March 17, 2011 meetings, NW Natural proposes surrogates for use in evaluating COI for which data are limited or not available. NW Natural proposes using benzene data for 1,2,4-TMB and 1,3,5-TMB, and naphthalene for 1-methylnapthlene and 2-methylnaphthalene. Although DEQ agrees with the selection of the specific surrogates for the referenced data-limited COI, according to the Data Gaps FSP NW Natural does not intend to use detected surrogate concentrations to assess the risk associated with (data-limited) COI, and does not otherwise propose an approach for incorporating these COI into the risk assessment. This approach will result in the actual risks from exposure being underestimated.

[3] Remediation Technologies, Inc., 1996, "Management of Manufactured Gas Plant Sites," a two-volume reference guide prepared for the Gas Research Institute.

NW Natural's identification of surrogates is not helpful for evaluating potential risks from chemicals for which site characterization data is limited and/or unavailable. DEQ believes it is not acceptable to merely state that chemicals analyzed in the past result in greater risks than from chemicals not included in past analyses. As such, DEQ does not approve this approach.

Lacking an approach from NW Natural for incorporating data-limited COI into the risk assessment, DEQ requests data from previous MGP waste sampling be used with the Data Gaps FSP sampling results to develop correlations between data-limited COI, and one or more chemicals with sufficient past data. For example, source area MGP waste sampling may determine that 1,2,4-TMB concentrations are approximately one-half the benzene concentrations in the former Tar Ponds Area. Using this information, benzene data from past samples can be used to estimate concentrations of 1,2,4-TMB in the Tar Ponds Area. DEQ believes it is reasonable to presume this relationship holds for soil across an MGP waste source area, in this case the Tar Ponds Area. As another example, sampling may determine that 2-methylnaphthalene concentrations are about one fourth the concentrations of naphthalene and approximately equal to pyrene concentrations in the former Naphthalene Plant Area. These relationships can be used to approximate 2-methylnaphthalene concentrations in past samples where data for this chemical are not available.

Last paragraph. NW Natural does not propose to collect additional data for carbazole, and appears to indicate the chemical should not be further evaluated in the Risk Assessment. DEQ does not approve either proposal.

DEQ acknowledges carbazole is a data-limited COI that currently has no human health and/or ecological soil/groundwater screening criteria. DEQ understands that although a structurally similar chemical is available (i.e., dibenzofuran), NW Natural does not propose using a toxicity surrogate for carbazole based on the lack of screening criteria. That said, carbazole is a site COI for which sediment ecological risk screening criteria are available. Because carbazole occurs in the uplands in MGP waste and groundwater, and present offshore of the Gasco Site where it contributes to risk in river sediments, DEQ considers it important to retain the chemical as a site COI for the uplands Risk Assessment.

Based on this information and consistent with guidance, the presence of carbazole in the uplands should be included in the screening step of the risk assessment by adding the chemical to screening tables as a site COI and flagging it to indicate screening criteria are unavailable. The chemical should then be discussed further in the uncertainty section of the risk assessment using dibenzofuran as a toxicity surrogate and acknowledging; 1) the similarity in chemical structures between carbazole and dibenzofuran (a chemical with screening criteria relevant to the risk assessment); and 2) how not including carbazole in calculations of risk, and not accounting for the incremental risk associated with the chemical, could affect and the outcome of the risk assessment.

DATA GAPS FSP

Section 1. According to NW Natural, the objective of the field sampling program is to, "...collect site specific total petroleum hydrocarbon (TPH) fraction data from the Gasco site." For clarification and consistent with DEQ's March 10, 2010 letter commenting on the RI and Risk Assessment reports, the January 25, 2011 meeting, and our May 12, 2011 revisions to NW Natural's March 17, 2011 meeting summary, TPH contamination at the Gasco Site does not correspond to the generic products listed in DEQ's RBDM Guidance (i.e., gasoline, diesel, or mineral oil).

Consistent with guidance, in situations where TPH does not conform to mixtures of generic fuel hydrocarbons, evaluating TPH contamination involves: 1) characterizing the composition, distribution, and toxicity of TPH in source material; and 2) evaluating the nature and extent of TPH contamination site-wide by collecting and analyzing representative samples of potentially impacted environmental media. This work is typically completed during the RI.

The primary purpose of characterizing TPH is to determine site-specific RBCs for evaluating risk from exposure to non-generic TPH for all applicable pathways. Per RBDM Guidance, calculations of site-specific TPH RBCs require analyzing material for TPH fractions as well as individual constituents of TPH. DEQ's comment under "COI List and Analyses" below provides details regarding the additional TPH constituents.

To date, MGP TPH contamination has not been characterized at the Gasco Site. Given the information provided above, DEQ's March 10, 2010 letter commenting on the RI and Risk Assessment reports, and our May 12, 2011 revisions to NW Natural's March 17, 2011 meeting summary; where TPH is concerned the objectives of the Data Gaps FSP include:

- Collecting samples representative of MGP waste in former process and waste management areas;
- Analyzing samples to develop site-specific MGP TPH RBCs consistent with RBDM Guidance; and
- Using site-specific RBCs to assess site-wide MGP TPH contamination using new data along with available sampling results and site information.

Based on DEQ's review, the Data Gaps FSP meets the first objective of collecting representative samples of MGP waste from source areas. However, the document does not discuss the second item (developing site-specific TPH RBCs) or the third item (assessing MGP TPH contamination across the site). DEQ's comments in this letter provided under "COI List and Analyses" address the second item.

Regarding the third item, DEQ's May 12th revisions to NW Natural's March 17th meeting summary indicate the approach laid-out in our March 10, 2010 letter should be used in the absence of a proposal from NW Natural. The March 10, 2010 approach relies on historical information regarding the locations of process and waste management areas, observations of MGP waste, and focused sampling outside source areas to evaluate MGP contamination across the site. Based on feedback from NW Natural, DEQ modified the March 10th approach to focus sampling within the former process and waste management areas. Those results would then be used with previously collected data and observations of MGP waste to assess MGP TPH contamination outside source areas across the site. In either case, DEQ considers evaluation of MGP TPH contamination outside source areas to be essential for addressing the data needs of the risk assessment.

Lacking a proposal from NW Natural to evaluate MGP TPH contamination outside waste management and process areas, DEQ requests the following approach be utilized.

- The sampling completed under the Data Gap FSP will provide the composition, concentration, and site-specific RBC for each source area composite sample.
- The sum of the concentrations obtained previously using NWTPH-Gx and NWTPH-Dx methods can then be compared directly to the calculated site-specific RBC for the source area.
- For samples analyzed only by EPA Method 418.1, NW Natural should develop a coefficient (greater than one) to account for the concentrations of benzene, ethylbenzene, toluene, and C5-C8 aliphatics that were not analyzed by or quantified in the Method 418.1 analysis (i.e., reported Method 418.1

results will be biased low as the method truncates the lower gasoline range). The coefficient should be estimated as follows:

- Determine what percentage of the total TPH concentration in the source area composite sample is made up of benzene, ethylbenzene, toluene, and C5-C8 aliphatics;
- Increase the Method 418.1 method concentration by the estimated percent value.

For example, analysis of MGP waste collected from the lampblack waste management source area may indicate benzene, ethylbenzene, toluene, and C5-C8 aliphatics represent 15% of the total concentration of constituents and/or TPH fractions detected in the composite sample. Based on this information, the Method 418.1 results for samples would be adjusted upwards by 15%. DEQ considers this a valid approach for estimating a reasonable range of MGP TPH concentrations for comparison with site-specific RBCs.

- Consistent with our comments to the cover letter, the presence of MGP waste can and should be used as in lieu of laboratory analyses where sampling and analytical data are insufficient to support the needs of the risk assessment.

In addition to objectives related to characterizing the composition and extent of MGP TPH, DEQ's March 10th letter and May 12th revisions to NW Natural's March 17th meeting summary discuss similar objectives related to the presence of data-limited MGP COI that were either not identified or were inadequately characterized to support a complete and valid risk assessment. The objectives for data-limited COI include the following:

- Including data-limited COI in the analysis of MGP waste samples collected from each source area; and
- Developing a method to estimate the nature and extent, and associated risk for data-limited COI.

As discussed above, DEQ does not approve NW Natural's proposal to ignore data-limited COI for which surrogates were identified. DEQ requests the COI, and sample collection, compositing, and analyses be revised consistent with our comments to Section 2.1.1 and Section 2.1.2 below. Furthermore, the risk associated with data-limited COI should be calculated consistent with the approach described in the third paragraph of our comment to the "4th through 6th paragraphs, COI and Surrogates" under the heading "Proposal for Addressing COIs in Risk Assessment."

NW Natural should note, in the interest of moving the risk assessment forward, DEQ continues to attempt to address the data needs of the risk assessment, and make the risk assessment process more efficient, by using: 1) existing data with the results of additional focused sampling work; and 2) observations of MGP waste where data is limited or lacking. The approach described in this letter (using data gaps sampling results with available data and site information) is consistent with these goals and is acceptable to DEQ for addressing data deficiencies.

Section 2.1. DEQ approves the numbers and locations of the borings listed here.

Section 2.1.1 and 2.1.2. DEQ does not approve the sample collection methodology and/or suite of analyses proposed in these two sections of the Data Gaps FSP. DEQ requests the sections be revised consistent with the comments provided below and tables 2 through 5 be revised accordingly.

COI List and Analyses. The Data Gaps FSP recommends analyzing samples for semi-volatile components of TPH (i.e., EPH, TPH-Dx), volatile parameters (i.e., VPH, TPH-Gx), and certain data-limited COI (i.e., dibenzofuran, thiocyanate). As indicated in DEQ's March 10, 2010 letter commenting on the RI and Risk Assessment, detailed in our May 12th revision to NW Natural's March 17th meeting

summary, and discussed during the meeting on August 15, 2011, a primary objective of the Data Gaps FSP is to develop site-specific RBCs for MGP TPH. To achieve this objective, NW Natural should analyze all samples consistent with RBDM Guidance for developing site-specific RBCs for non-generic mixtures of hydrocarbons (i.e., "Method 2", page 30), including VPH, EPH, BTEX compounds, naphthalene, 1,2,4-TMB, and 1,3,5-TMB. In addition, samples should be analyzed for TPH-Gx and TPH-Dx for use with available site data to assess TPH contamination outside source areas.

For reasons that are not made clear in the Data Gaps FSP, NW Natural proposes limiting sampling and analysis of dibenzofuran and thiocyanate to the upper 3-feet of each source area. DEQ does not approve this approach as the construction and excavation worker exposure pathways at the site are complete. Based on this information, DEQ requests NW Natural to collect and analyze dibenzofuran and thiocyanate in samples collected from 0-3 feet and 3-12 feet.

Regarding 1-methylnapthlene and 2-methylnaphthalene, given DEQ did not approve NW Natural's surrogate approach and these chemicals are identified as site COI in the RI Report and for the risk assessment, laboratory results for both chemicals should be reported for all samples. DEQ notes EPA Method 8270C includes these chemicals in the analyte list and the method is already being used to test soils for dibenzofuran.

Sample Collection, Compositing, and Volatile Parameter Analyses. DEQ's comments above regarding COI, sample analyses, and reporting apply here. As such, the analytes referenced above should be substituted into this comment as appropriate in the revised Data Gaps FSP.

NW Natural proposes to collect samples from each boring in a source area over two general depth intervals (i.e., 0-3 feet, 3-12 feet). DEQ understands two samples will be collected over the upper 3-feet of soil. According to the Data Gaps FSP, one sample will be analyzed for VPH and TPH-Gx and the other will be held for later compositing. All samples held will be composited into a single sample for analysis of EPH, dibenzofuran, thiocyanate and TPH-Dx for that source area. DEQ does not approve this approach for reasons that are discussed in detail below.

In the depth interval covering 3-12 feet, the Data Gaps FSP indicates that up to three samples of visually impacted material will be collected from each boring in a source area. Two sets of samples will be collected. One set of samples will consist of up to three discrete samples, each of which will be analyzed for VPH. The second set of samples will be held for compositing with other samples collected from within the same source area. The samples will be combined into a single source area composite sample and analyzed for EPH. DEQ also does not approve this approach for reasons that are discussed in the next paragraph.

As indicated, DEQ does not approve the proposed sampling approaches described in the Data Gaps FSP for either the 0-3 feet or the 3-12 feet depth intervals. DEQ acknowledges NW Natural's approach for analyzing individual samples collected for VPH, or VPH and TPH-Gx is intended to avoid losses of volatile constituents during sampling. However, to accurately characterize TPH composition it is critical that to the maximum extent feasible, all chemical analyses be conducted on the same sample material. NW Natural's proposal to match EPH results from source area composite samples to the VPH, or VPH and TPH-Gx results from separate samples, deviates from this objective and introduces uncertainties and errors into the calculations of site-specific MGP TPH RBCs.

Instead of collecting and analyzing individual samples, DEQ requests all analyses be performed on the same sample material. DEQ requests composite samples be collected for analysis of volatile parameters (i.e., VPH, TPH-Gx, BTEX compounds, naphthalene, 1,2,4-TMB, and 1,3,5-TMB) using methods described by the State of Alaska, Department of Environmental Conservation (DEC) March 2009 draft guidance for multi-incremental soil sampling[4]. Using DEC guidance, NW Natural would modify the FSP by transferring all of the discrete samples collected within a source area for volatile parameter analyses, directly into a single container with extraction solution (i.e., methanol) in the field. Each sample container, prepared by the laboratory before-hand, would include a sufficient volume of extraction solution for the number of sub-samples to be collected within the corresponding source area. Alternatively, if the volume of methanol needed for all sub-samples is large and presents a handling problem during field work, each discrete sample can be collected and submitted to laboratory for combined placement into a single container before analysis. In this case, samples should be transported to the laboratory in a sampling device designed for zero-headspace analysis and equipped with a vapor tight seal (e.g., EnCore® sampling device or equivalent).

Modifying the Data Gaps FSP consistent with DEQ's comments will produce one dataset for semi-volatile components of TPH and data-limited COI (i.e., EPH, TPH-Dx, dibenzofuran, naphthalene, 1-methylnaphthalene, 2-methyl naphthalene, thiocyanate) and a corresponding dataset for volatile parameters (i.e., VPH, TPH-Gx, BTEX compounds, naphthalene, 1,2,4-TMB, 1,3,5-TMB) over both depth intervals of interest (0-3 feet, 3-12 feet) for each designated waste management or process area. This simplifies the overall sampling program as limits on the number of samples collected from impacted depth intervals are no longer needed for the depth interval covering 3-12 feet. Based on observations made during drilling, samples can be collected from each of the depth intervals impacted by MGP waste and combined into two composite samples for the source area. In addition, along with EPH the results the volatile parameter analyses can be directly incorporated into MGP waste TPH RBC calculations for that source area.

Field Sampling Methodology. The Data Gaps FSP does not describe the procedures NW Natural will use in the field to collect composite samples and/or discrete samples for analysis. Sections 2.1.1 and 2.1.2 should be revised to provide detailed descriptions of all aspects of composite and discrete sample collection (e.g., handling, composting, field preservation) from the point the single-use plastic liner is retrieved and cut to when containerized samples are placed on ice in the shipping container. DEQ considers the Data Gaps FSP to be incomplete without this information. Although not mentioned in the Data Gaps FSP, DEQ anticipates NW Natural will document observations made during drilling by compiling information on boring logs consistent with previous work completed at the site.

Section 4.3.2.1.4. This section describes field quality assurance sampling and that the collection of field QA samples includes one field blank and one duplicate sample. The discussion of the field blank appears to be a carryover from a previous field sampling plan as the text states "...the field blank will be analyzed for the identical chemical list as the groundwater samples." In addition, collecting one duplicate sample is not consistent with Section 4.1.1, which states that field duplicates for chemistry samples will be collected at a frequency of 1 in 10 samples. The Data Gaps FSP should be reviewed and revised accordingly.

Section 4.4. This section briefly describes the data analysis and reporting NW Natural proposes to complete subsequent to field work. DEQ does not approve this section and requests it be revised

[4] http://www.dec.state.ak.us/spar/csp/guidance/multi_increment.pdf

consistent with DEQ's comments provided above regarding data use, including incorporating DEQ's approaches for applying the results of the data gaps sampling to previous sampling results to: 1) evaluate MGP TPH contamination site-wide; and 2) assess the occurrence and risk associated with COI for which data are limited or not available.

NEXT STEPS

NW Natural should revise and resubmit the Data Gaps FSP consistent with this letter. The revised document should be submitted to DEQ within 30 days of receiving the hard copy of our comments.

Please feel free to contact me if you have questions regarding this letter.

Sincerely,

Dana Bayuk
Project Manager
Portland Harbor Section

Cc: Patty Dost, Pearl Legal Group
John Edwards, Anchor QEA
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ECSI No. 84 File
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